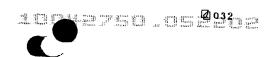


- 1 1. An electrochemical cell, comprising:
- 2 a cathode;
- an anode; and
- a separator disposed between the cathode and the
- 5 anode, wherein the cathode comprises:
- 6 manganese dioxide; and
- nonsynthetic, nonexpanded graphite particles
- 8 having an average particle size of less than about 20
- 9 microns.
- 1 2. The electrochemical cell according to claim 1,
- 2 wherein the nonsynthetic, nonexpanded graphite particles
- 3 have an average size of from about 2 microns to about 12
- 4 microns.
- 1 3, The electrochemical cell according to claim 1,
- 2 wherein the nonsynthetic, nonexpanded graphite particles
- 3 have an average size of from about 5 microns to about 9
- 4 microns.
- 1 4. The electrochemical cell according to claim 1,
- 2 wherein the cathode comprises at most about 10 percent
- 3 nonsynthetic, nonexpanded graphite particles by weight.
- The electrochemical cell according to claim 1,
- 2 wherein the electrochemical cell is an alkaline battery.
- 1 6. The electrochemical cell according to claim 1,
- 2 wherein the electrochemical cell is selected from the group
- 3 consisting of AA batteries, AAA batteries, AAAA batteries, C
- 4 batteries and D batteries.





- 1 7. The electrochemical cell according to claim 1,
- 2 wherein the separator comprises a nonwoven, non-membrane
- 3 material and a second nonwoven, non-membrane material
- 4 disposed along a surface of the first material.
- 1 8. The electrochemical cell according to claim 1,
- 2 wherein the cathode has a porosity of from about 21% to
- 3 about 28%.
- 1 9. The electrochemical cell according to claim 1,
- 2 wherein the anode comprises zinc particles, and wherein the
- 3 anode has a porosity of from about 2 grams of zinc particles
- 4 to about 2.45 grams of zinc particles per cubic centimeter
- 5 of anode volume.
- 1 10. The electrochemical cell according to claim 1,
- 2 further comprising an electrolytic solution, wherein a
- 3 weight ratio of the manganese dioxide to the electrolytic
- 4 solution is from about 2.2 to about 2.9.
- 1 11. The electrochemical cell according to claim 1
- 2 further comprising an electrolytic solution, wherein the
- 3 anode comprises zinc particles and a weight ratio of the
- 4 zinc particles to the electrolytic solution is from about
- 5 0.9 to about 1.25.
- 1 12. A cathode, comprising:
- 2 manganese dioxide; and
- 3 nonsynthetic, nonexpanded graphite particles having
- 4 an average particle size of less than about 20 microns.





- 1 13. The cathode according to claim 12, wherein the
- 2 nonsynthetic, nonexpanded graphite particles have an average
- 3 size of from about 2 microns to about 12 microns.
- 1 14. The cathode according to claim 12, wherein the
- 2 nonsynthetic, nonexpanded graphite particles have an average
- 3 size of from about 5 microns to about 9 microns.
- 1 15. The cathode according to claim 12, wherein the
- 2 cathode comprises at most about 10 percent nonsynthetic,
- 3 nonexpanded graphite particles by weight.
- 1 16. The cathode according to claim 12, wherein the
- 2 cathode has a porosity of from about 21% to about 28%.